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| 09/778,669      | 02/07/2001  | Francesco Pappalardo | 851763.401          | - 4364           |

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| EXAMINER |
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HIRL, JOSEPH P

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| ART UNIT | PAPER NUMBER |
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2121

DATE MAILED: 02/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/778,669

**Applicant(s)**

PAPPALARDO ET AL.

**Examiner**

Joseph P. Hirl

**Art Unit**

2121

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 24 November 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 February 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. This Office Action is in response to an AMENDMENT entered November 24, 2003 for the patent application 09/778,669 filed on February 7, 2001.
2. The First Office Action of July 25, 2003 is fully incorporated into this Final Office Action by reference.
3. The claims and only the claims form the metes and bounds of the invention. "Office personnel are to give the claims their broadest reasonable interpretation in light of the supporting disclosure. *In re Morris*, 127 F.3d 1048, 1054-55, 44USPQ2d 1023, 1027-28 (Fed. Cir. 1997). Limitations appearing in the specification but not recited in the claim are not read into the claim. *In re Prater*, 415 F.2d, 1393, 1404-05, 162 USPQ 541, 550-551 (CCPA 1969)" (MPEP p 2100-8, c 2, I 45-48; p 2100-9, c 1, I 1-4). The Examiner has full latitude to interpret each claim in the broadest reasonable sense. Examiner will reference prior art using terminology familiar to one of ordinary skill in the art. Such an approach is broad in concept and can be either explicit or implicit in meaning.
4. Examiner's Opinion:  
  
Para 3 above applies. Examiner encourages the applicant to respond specifically to all points made in the office action. This was not done in the First Office Action.

***Status of Claims***

5. Claims 1, 5, 12 and 29 are amended. Claims 1-31 are pending.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

7. Claims 1-31 are rejected under 35 U.S.C. 102(a) as being anticipated by Lin (IEEE 0-7803-5731-0/99 referred to as **Lin**; “redundant storage” has been omitted following the action of para 6 above).

**Claims 1, 12**

Lin anticipates organizing for a quantity included among the membership functions and the operands, the computer store for storing the values of the quantity which are already available (**Lin**, Fig. 2); and checking, using the computer structure, at a time of identification of a new value of the quantity, whether the new value is already present in the computer store (**Lin**, Fig. 2; page V-247, col 1, lines 22-36; page V-247, lines 1-14).

**Claims 2, 13**

Lin anticipates the operation of identifying the new value with a corresponding value already present in the corresponding store (**Lin**, Fig. 2; page V-247, col 1, lines 22-36; page V-247, lines 1-14).

**Claims 3, 14**

Lin anticipates encoding the fuzzy inferences and corresponding membership functions; establishing a pointing mechanism from the encoded fuzzy inferences to the corresponding encoded membership functions; checking whether a given encoded fuzzy inference points to an encoded membership function which is already present in the corresponding store; and acting on the pointing mechanism according to whether the encoded membership function is already present in the corresponding store (**Lin**, Abstract, lines 1-22; Fig. 2; page V-247, col 1, lines 22-36; page V-247, lines 1-14; Examiner's Note (EN): fuzzy inference systems are typically implemented using computer technology; computers operate on programming code; pointers in a typical programming environment represent a variable that contains the memory location of some data rather than the data itself; this allows the memory for that data to be dynamically allocated; integrating the computer technology is inherent with Lin's dynamic-linked rule base, establishing Lin's anticipation of the Applicant's disclosure).

**Claims 4, 15**

Lin anticipates if an outcome of the checking is positive, the operation of redirecting the pointer of the given encoded fuzzy inference towards the encoded membership function already present in the corresponding store (**Lin**, Fig. 2; page V-247, col 1, lines 22-36; page V-247, lines 1-14; EN: see comments in Claim 3).

**Claims 5, 16**

Lin anticipates if an outcome of the checking is negative, storing the corresponding encoded membership function, and writing its pointer into the given

encoded fuzzy inference (**Lin**, Fig. 1; page V-244, col 2, lines 1-10; EN: if the outcome is negative, Fig. 2 defaults to Fig. 1; see comments of Claim 1).

**Claims 6, 17**

Lin anticipates the encoded fuzzy inferences corresponds to a plurality of encoded membership functions and the operation of acting on the pointing mechanism is carried out for all the encoded membership functions of the given encoded fuzzy inference and for all the encoded fuzzy inferences to be stored (**Lin**, Fig. 5).

**Claims 7, 18**

Lin anticipates in relation to the operands, the operations of: providing, in the structure, a function for calculating the operands from corresponding calculation parameters (**Lin**, page V-244, col 2, lines 1-10); and disabling, at least partially, the calculation function when it is found that a corresponding operand value is already present in the corresponding store (**Lin**, page V-244, col 2, lines 1-24).

**Claims 8, 19**

Lin anticipates in relation to the operands, the operations of: providing, in the structure, a function for calculating the operands from corresponding calculation parameters (**Lin**, page V-244, col 2, lines 1-10); configuring the corresponding store for the storage of the operands and of the corresponding calculation parameters (**Lin**, page V-244, col 2, lines 1-24; EN: inherent in the operation of a computer are the operations of calculating and storing); and scanning the corresponding store on the basis of the corresponding calculation parameters, identifying a corresponding operand value already present in the corresponding store on the basis of corresponding calculation

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parameters already present in the corresponding store (**Lin**, page V-244, col 2, lines 1-24; EN: inherent in the operation of a computer are logic operations that facilitate comparison).

**Claims 9, 20**

Lin anticipates the corresponding calculation parameters are an input variable of the structure and a pointer to the corresponding membership function (**Lin**, page V-244, col 2, lines 1-24; EN: inherent in the operation of a computer are calculations).

**Claims 10, 21**

Lin anticipates in relation to the operands, the operation of organizing the corresponding store in the form of a stack organized for an ordered loading of new values of the operands from an uppermost position with downward shifting of the values already present in the corresponding store (**Lin**, page V-244, col 2, lines 1-24; EN: inherent in the operation of a computer are storage techniques such as FIFO, LIFO, etc meaning stacks).

**Claims 11, 22**

Lin anticipates when it is found that the new value of one of the operands is already present in the corresponding store, the operation of moving the new value which is already present to the uppermost position of the corresponding store (**Lin**, page V-244, col 2, lines 1-24; EN: inherent in the operation of a computer are storage techniques such as FIFO, LIFO, etc meaning stacks).

**Claim 23**

Lin anticipates a membership function storage device for storing encoded membership functions (**Lin**, page V-244, col 2, lines 1-10; EN: inference engine contains membership functions); and fuzzy inference encoding means, coupled to the membership function storage device, for encoding the input fuzzy inference into an encoded fuzzy inference, including for each of the input membership functions (**Lin**, page V-244, col 2, lines 1-10; EN: see Claim 1 comments): encoding the input membership function into an encoded input membership function (**Lin**, page V-244, col 2, lines 1-10; EN: see Claim 1 comments); comparing the encoded input membership function to the stored encoded membership function (**Lin**, Fig. 2; page V-247, col 1, lines 22-36; page V-247, lines 1-14); if a stored encoded membership function is found to match the encoded input membership function, then storing with the encoded fuzzy inference a pointer to the matching stored encoded membership function (**Lin**, Fig. 2; page V-247, col 1, lines 22-36; page V-247, lines 1-14; EN: see comments in Claim 3); and if none of the stored encoded membership functions is found to match the encoded input membership function, then storing the encoded input membership function in the membership function storage device and storing with the encoded fuzzy inference a pointer to the stored encoded input membership function (**Lin**, Fig. 1; page V-244, col 2, lines 1-10; EN: if the outcome is negative, Fig. 2 defaults to Fig. 1; see comments of Claim 1).



**Claim 24**

Lin anticipates a fuzzy inference storage unit coupled to the fuzzy inference encoding means and structured to store the encoded fuzzy inference (**Lin**, Fig. 2; EN: see comments of Claim 1).

**Claim 25**

Lin anticipates an alpha storage device for storing alpha values (**Lin**, page V-247, col 1, lines 22-23; EN: if relates to antecedent, alpha to the antecedent values, storage to computers); and fuzzy inference control means, coupled to the alpha storage device and to the membership function storage device, for receiving a fuzzy input, for receiving from the membership function storage device an encoded membership function corresponding to the fuzzy input, and determining whether the alpha storage device stores an alpha value corresponding to the fuzzy input and corresponding encoded membership function (**Lin**, page V-247, col 1, lines 22-23; EN: input relates to an if then rule).

**Claim 26**

Lin anticipates wherein the fuzzy inference control means includes output means wherein if a stored alpha value is found to correspond to the fuzzy input and corresponding membership function, the output means outputs the corresponding stored alpha value (**Lin**, page V-247, col 1, lines 22-23; EN: input can equal output for an identity function).

**Claim 27**

Lin anticipates alpha calculation means for calculating an alpha value corresponding to the fuzzy input and corresponding encoded membership function wherein the fuzzy inference control means includes means for interrupting the calculation of the alpha value by the alpha calculation means if a stored alpha value is found to correspond to the fuzzy input and corresponding membership function (**Lin**, page V-244, col 1, lines 11-24; EN: the purpose of Lin's paper).

**Claims 28, 31**

Lin anticipates wherein the alpha storage device is organized as a stack of alpha values with each alpha value in the stack corresponding to a respective fuzzy input and a respective pointer to an encoded membership function stored in the membership function storage device (**Lin**, Fig. 2; page V-247, col 1, lines 22-36; page V-247, lines 1-14; EN: standard computer application, see comments of Claim 1).

**Claim 29**

Lin anticipates an alpha storage device for storing alpha values (**Lin**, Fig. 2); alpha calculation means for receiving the fuzzy input and a membership function corresponding to the fuzzy input and calculating an alpha value corresponding to the fuzzy input and corresponding membership function (**Lin**, page V-247, col 1, lines 22-23; EN: input relates to an if then rule); and fuzzy inference control means, coupled to the alpha storage device and alpha calculation means (**Lin**, Fig. 2), for: receiving the fuzzy input and corresponding membership function (**Lin**, Fig. 2; determining whether the alpha storage device stores an alpha value corresponding to the fuzzy input and

corresponding membership function (Lin, Fig. 2; page V-247, col 1, lines 22-36; page V-247, lines 1-14); and if a stored alpha value is found to correspond to the fuzzy input and corresponding membership function, outputting the corresponding stored alpha value (Lin, Fig. 2; page V-247, page V-248, col 2, lines 16-30; page V-248, col 1, lines 1-41).

### **Claim 30**

Lin anticipates the fuzzy inference control means includes means for interrupting the calculation of an alpha value by the alpha calculation means if a stored alpha value is found to correspond to the fuzzy input and corresponding membership function and the alpha calculation means includes means for outputting the calculated alpha value if not interrupted by the fuzzy inference control means (Lin, page V-244, col 1, lines 11-24; EN: the purpose of Lin's paper notwithstanding whatever interrupts) .

### ***Claim Rejections - 35 USC § 112***

8. Claims 1 and 12 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The statement: "preventing, in response to the checking, redundant storage of the new value of the quantity in the computer structure" was not identified in the original disclosure.

***Response to Arguments***

9. The objection to the abstract is withdrawn.
10. The rejections to claims 1-31 under 35 USC 101 are withdrawn.
11. The affidavit filed on November 24, 2003 has been fully considered but in its current form is ineffective to overcome the Lin prior art.

In regard to 37 CFR 1.131(b), the following applies:

The showing of facts shall be such in character and weight, as to establish reduction to practice prior to the effective date of the reference, or conception of the invention prior to the effective date of the reference coupled with due diligence from prior to said date to a subsequent reduction to practice or to the filing of the application. Original exhibits of drawings or records, or photocopies thereof, must accompany and form part of the affidavit or declaration or their absence satisfactorily explained.

The affidavit failed to establish reduction to practice prior to the effective date of the reference, or conception of the invention prior to the effective date of the reference coupled with due diligence from prior to said date to a subsequent reduction to practice or to the filing of the application. The affidavit has only the signature of one inventor (there are three) and the evidence cited was significantly deficient as indicated by the following remarks:

A. The original or photocopy of Appendix A signed by Francesco Pappalardo, dated September 28, 1999 was not provided as indicated in the affidavit, page 1.

B. The translation of Appendix A cites Marcello Palano as an inventor. The records of USPTO identifies Carmelo Palano as an inventor. Which document is correct? Do we have two inventions?

C. Translated Appendix A makes reference to figures. No figures were provided.

D. Translated Appendix A makes reference to prior art concerning fuzzy theory that has been omitted since it relates to earlier patents (affidavit, page 1). Do we have an issue of double patterns?

E. Translated Appendix A, pages 4, 7 makes reference to a circuit shown in figure 1, not provided. The application generally deals with a computer implementation (see claims 1, 12, 29) and the only specification reference (not in the background section...prior art) is made to circuit 11 which performs a Mux operation...not applicable. There are serious questions concerning the specification and Translated Appendix A. Perhaps Translated Appendix A relates to another application?

F. Appendix B, page 1 has Marcello crossed out and Carmelo written in. However, the translated version reverts back to Carmelo. Who are the inventors?

G. What was the nature of the disclosure alluded to on page 1 of Appendix B?

H. In regard to the potential disclosure alluded to on page 1 of Appendix B, who was involved? Were there non-disclosure agreements that were signed and dated?

I. Concerning Appendix C, the enclosures were not provided.

J. Concerning the affidavit and related appendices, why didn't all of the inventors sign on and commit to the statements of Francesco Pappalardo?

K. Following Francesco Pappalardo chronology of the affidavit, why were appropriate internal documents not provided?

L. Inventors typically maintain logs of inventions. Why were not copies of such logs provided with the Affidavit?

37 CFR 1.131(b) requires an affidavit to manifest itself with "character and weight". It is the opinion of the Examiner that the affidavit of November 24, 2003 is seriously deficient on both points. Consequently, the affidavit will be placed in the file but will not be further considered.

12. Applicant's arguments filed on November 24, 2003 related to Claims 1-31 have been fully considered but are not persuasive.

In reference to Applicant's argument:

Lin does not anticipate claims 1-31 under section 102(a) because Lin was not published before the claimed invention was made. According to the copy of Lin received from the Examiner, Lin was published October 12-15, 1999. The European patent application 00830082.4, from which the present application claims priority, was filed on February 8, 2000. Enclosed is a Rule 131 Declaration signed by one of the inventors, Francesco Papalardo, showing that the claimed invention was conceived prior to October 12-15, 1999 and was diligently reduced to practice with the filing of the priority European patent application 00830082.4. In support of the Declaration are a Patent Proposal (Appendix A) dated September 28, 1999 (with English translation), which describes the claimed invention in detail, and three documents (Appendixes B-D) with English translation showing diligent steps to reduce the invention to practice. Accordingly, Lin was not published before the claimed invention was made, and thus, claims 1-31 are not anticipated by Lin under section 102(a).

Examiner's response:

Para 9 above applies. Simply stated, the affidavit of November 24, 2003 was ineffective in setting aside the prior art of Lin.

In reference to Applicant's argument:

Even if it were assumed that Lin is prior art, Lin still does not anticipate the claimed invention. As discussed above, claim 1 recites checking, using the computer structure, at a time of identification of a new value of a quantity included among fuzzy inference membership functions and operands, whether the new value is already present in the computer store; and preventing, in response to the checking, redundant storage of the new value of the quantity in the computer structure. Lin does not check in a computer store for already-stored values that match a new value of a membership function or operand and does not prevent redundant storage of such a new value. In fact, the entire point of Lin is to create a

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dynamic link rule base that is a redundant sub-set of an original rule base. Lin simply compares an input value with a premise part of each of numerous fuzzy rules stored in the original rule base and copies those fuzzy rules having a non-zero firing strength, based on the comparison, into the dynamic link rule base. Nothing in Lin suggests a method of preventing redundancy in the original rule base by itself-, in the dynamic link rule base by -itself, or in the dynamic link rule base compared to the original rule base.

Examiner's response:

Para 3 above applies. Lin at page V-247 states: "The purpose of rule selector is to pick out the fired rules and reject the non-fired rules." Such rules will match a new membership function (the ones that fired) and those that have not fired are rejected. The issue with redundant storage was appropriately addressed at para 6 as new matter.

In reference to Applicant's argument:

Lin also does not disclose the invention recited in claims 23-28. In particular, Lin does not disclose fuzzy 'Inference encoding means that compares an encoded input membership function to a stored membership function, stores a pointer to a matching stored membership function, stores the encoded input membership function if a match is not found, or store a pointer to the stored encoded input membership function. Instead, Lin simply compares an input value to stored fuzzy rules without comparing fuzzy rules or membership functions to each other. Without comparing membership functions, Lin cannot possibly store a pointer and/or store an encoded input membership function based on such a comparison.

Examiner's response:

Para 3 above applies. Lin at page V-247 states: "The purpose of rule selector is to pick out the fired rules and reject the non-fired rules." Such rules will match a new membership function (the ones that fired) and those that have not fired are rejected. Prior office action applies. See Lin at V-248 concerning membership functions and their relation to fuzzy rules. To one of ordinary skill in the art, pointers are generic. Since it is only the claims that form the metes and bounds of the invention, the references to Lin are appropriate and are provided again for convenience below.

***Conclusion***

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

14. Claims 1-31 are rejected.

***Correspondence Information***

Any inquiry concerning this information or related to the subject disclosure should be directed to the Examiner, Joseph P. Hirl, whose telephone number is (703) 305-1668. The Examiner can be reached on Monday – Thursday from 6:00 a.m. to 4:30 p.m.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Anil Khatri can be reached at (703) 305-0282.



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Any response to this office action should be mailed to:

Commissioner of Patents and Trademarks,  
Washington, D. C. 20231;

or faxed to:


(703) 746-7239 (for formal communications intended for entry);

or faxed to:

(703) 746-7290 (for informal or draft communications with notation of  
"Proposed" or "Draft" for the desk of the Examiner).

Hand-delivered responses should be brought to:

Receptionist, Crystal Park II  
2121 Crystal Drive,  
Arlington, Virginia.



**GEORGE B. DAVIS**  
**PRIMARY EXAMINER**

Joseph P. Hirl



February 17, 2004